HOW TO OPERATE THE TRAIN

CHANGING THE TRAIN SPEED

The speed of the train is varied by moving the voltage control on the transformer panel. The higher the voltage the greater the speed. Most Lionel transformers provide at least two different voltage ranges. The lower range is used for light trains; the higher range for heavier trains. Always try the lowest range first; use the higher range only if the train does not go fast enough. When running your train keep one hand on the voltage control. In this way you will be able to slow the train down on curves, speed it up along the straight-away or bring it down to a gradual stop at the uncoupling track section.

REVERSING THE LOCOMOTIVE

Lionel locomotives can be stopped and reversed by *remote control.* The reversing mechanism is known as the "E-Unit." It is mounted within the locomotive and is operated by momentary interruptions of current to the track. This operation can be performed at any distance from the locomotive either by operating the "Direction" control on the transformer, or by turning the voltage control to "OFF" position. (The accidental "shorting" of the track, or disconnecting of one of the current-carrying wires will also cause the E-Unit to operate.)

The E-Unit has three positions which operate in rotation: Forward, Stop, Reverse, Stop, etc. When the locomotive is running move the "Direction" control *once* to stop it and *twice* to reverse it. The Stop or Neutral position enables the locomotive to stand still even though power for accessories, lights, etc. is still supplied to the track.

NOTE: Lionel Locomotive No. 6110 is an exception to this general rule since its reversing mechanism does not have a neutral position, but moves from "Forward" directly to "Reverse".

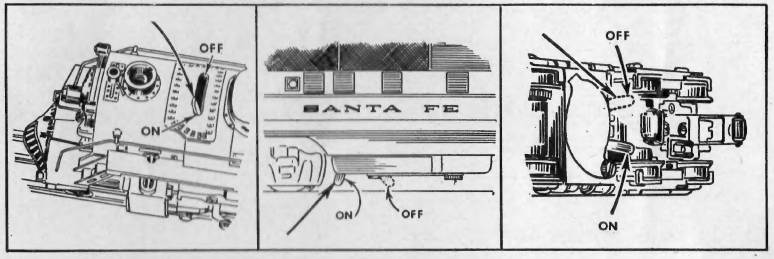

Figure 10—Location of E-Unit on Various Locomotives

HOW TO DISCONNECT REVERSING MECHANISM

The E-Unit can be disconnected by pushing the E-Unit lever to the OFF position. Then the locomotive will not reverse automatically but will always run in the same direction. To disconnect the E-Unit start the locomotive going in the desired direction; stop it with your hand while power is on; then move the E-Unit to OFF. Figure 10 shows the location of the E-Unit lever in three types of Lionel locomotives.

For normal operation the E-Unit lever should be left ON in order to take advantage of the remote control of locomotive direction. It should be moved to OFF when operating the train together with an automatic stop station, operating bridge or insulated block, as described elsewhere in this booklet.

NOTE: If the E-Unit is disconnected while it is in Stop position, the locomotive will not start at all. Also, because it is operated partly by gravity the E-Unit will not work if the locomotive is placed on its side or held upside down.

BLOWING THE WHISTLE

Following actual railroading practice most Lionel steam-type trains are equipped with a two-tone whistle, while the electric and diesel types contain a horn. The whistle is mounted in the locomotive tender, while the horn is located in the electric locomotive itself and in the power car of the twin diesel. Both the whistle and the horn can be sounded anywhere on the track by operating the whistle controller.

In most modern Lionel transformers the whistle controller is built into the transformer and is operated by a button or a lever on the transformer panel. If your transformer does not have a built-in whistle controller, an external No. 167 Whistle Controller must be used. See page 14.

Note: Lionel remote control horn and whistle can be used only with alternating current having a frequency of more than 40 cycles. When line frequency is less than 40 cycles (Some parts of Canada and some communities in the United States use 25-cycle power lines) the whistle and the horn must be disconnected. Otherwise they will sound continuously. Remove dry cell from locomotives using horn. In whistle tenders disconnect wire from contact rollers.

FLASHLIGHT CELLS FOR HORNS

The power for operating the whistle is supplied by the track itself, but the horns on the diesel and the electric locomotive use a flashlight cell which is supplied with the outfit and which must be inserted into the locomotive as shown in Figure 11. When the cell is worn out it can be replaced by any standard size D flashlight cell.

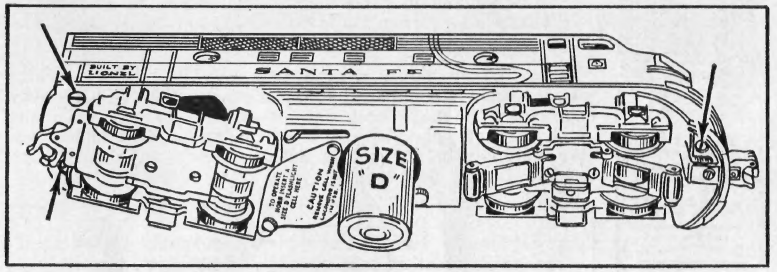

Figure 11—How a Flashlight Cell Fits Into a Diesel Locomotive. Arrows Point to Screws Which Hold the Locomotive Body

"MAGNE-TRACTION" LOCOMOTIVES

All new Lionel locomotives are equipped with "Magne-Traction" which means that the locomotive driving wheels are magnetized to enable the locomotive to pull heavy loads without slipping on the track. Be careful not to let pins, paper clips, carpet tacks or other loose small iron objects to come in contact with the locomotive or they will be attracted to the wheels, gears or axles and may jam up the mechanism of the locomotive. Small particles of iron, such as iron filings may be removed from magnetized parts with the point of a sharp steel needle. To obtain the benefit of "Magne-Traction" use only Lionel track. "Magne-Traction" is not effective on aluminum, brass or stainless steel rails.

Although "Magne-Traction" locomotives can pull more than twice the load of ordinary locomotives they should not be overloaded beyond that point, or their motors will tend to overheat.

Also, because "Magne-Traction" is effective only on steel rails, very heavily loaded "Magne-Traction" locomotives will tend to skid when going over bakelite portions of remote control switches, and therefore should not be stopped on switches.